

CLAIMS

1. A compound semiconductor epitaxial substrate for use in a strain channel high electron mobility field effect transistor, comprising an InGaAs layer as a strain channel layer and an AlGaAs layer containing n-type impurities as an electron supplying layer, wherein said InGaAs layer has an electron mobility at room temperature of $8300 \text{ cm}^2/\text{V}\cdot\text{s}$ or more.
2. The compound semiconductor epitaxial substrate according to claim 1, wherein the InGaAs layer constituting said strain channel layer has an In composition of 0.25 or more.
3. The compound semiconductor epitaxial substrate according to claim 1, wherein GaAs layers having a thickness of 4 nm or more each are laminated respectively in contact with a top surface and a bottom surface of said strain channel layer.
4. A method for manufacturing the compound semiconductor epitaxial substrate according to claim 1, 2, or 3, comprising epitaxially growing the layer of each compound semiconductor by employing a metalorganic chemical vapor deposition (MOCVD) method.
5. The method according to claim 4, wherein the InGaAs layer is epitaxially grown as the strain channel layer such that the In composition thereof becomes 0.25 or more, the AlGaAs layer containing n-type impurities is epitaxially grown as the electron supplying layer, and GaAs layers are each epitaxially grown to a

thickness of 4 nm or more respectively in contact with a top surface and a bottom surface of said strain channel layer.